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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Alexander BECKMANN
Serial No.: New
Filing Date: September 6, 2001
For: SULFIDIZATION OF SULFIDE ORES FOR
HYDROMETALLURGICAL EXTRACTION OF COPPER
AND OTHER METALS

PRELIMINARY AMENDMENT

Assistant Commissioner of Patents
Washington, D.C. 20231

Sir:

Prior to initial examination, please amend the above-identified application as follows:

IN THE SPECIFICATION

Please insert the following sentence on line 1, immediately following the title:

--This is a nationalization of PCT/DE00/04447, filed December 14, 2000, and published in German.--

IN THE CLAIMS

Please cancel claims 1-14 without prejudice or disclaimer.

Please add new claims 15-28 as found on the attached two pages.

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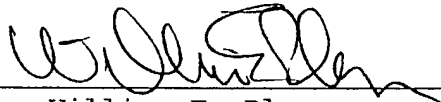
REMARKS

The foregoing Preliminary Amendment is requested in order to delete the multiple dependent claims and avoid paying the multiple dependent claims fee.

Early action on the merits is respectfully requested.

Respectfully submitted,

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CLAIMS:

15. A process for extracting metals from copper-sulfidic and/or copper/iron-sulfidic ores comprising leaching steps of microbiological or chemical nature for leaching out the metals, characterized in that
 1. the ores are converted to covellite, pyrite and accompanying sulfides by the addition of sulfur and additives in a conversion step interposed prior to the leaching steps; and
 2. copper and other metals, precious metals and rare earths contained in the reaction product are extracted.
16. The process according to claim 15, characterized in that said iron is extracted from the reaction product and that metals and rare earths deposited in the reaction product, especially gold, silver, platinum (including elements of the platinum group), cobalt, nickel and zinc, are separated off.
17. The process according to claim 15, characterized in that the metals are leached out using a leaching or bioleaching process, and sulfur is extracted from the covellite, pyrite and other minerals belonging to the sulfide group by a further process.
18. The process according to claim 15, characterized in that said conversion is performed in an inert atmosphere.
19. The process according to claim 15, characterized in that said conversion is performed in an open process.
20. The process according to claim 15, characterized in that said conversion is performed in a rotary-tube furnace.

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21. The process according to claim 15, characterized in that said conversion is performed at a temperature of between room temperature and 501 °C, especially at 410 °C.
22. The process according to claim 15, characterized in that said conversion is promoted by microwave irradiation.
23. The process according to claim 15, characterized in that said conversion is effected for a period of from 0.5 h to 24 h, especially 2 h.
24. The process according to claim 15, characterized in that sulfur is added in stoichiometric amounts.
25. The process according to claim 15, characterized in that sulfur is added in a solid state and the conversion is effected under a pressure of up to 10 bar.
26. The process according to claim 24, characterized in that said conversion proceeds in an atmosphere saturated with sulfur vapor.
27. The process according to claim 15, characterized in that sulfur is added in a gaseous state and the conversion is effected under reduced pressure.
28. The process according to claim 15, characterized in that the conversion is effected with a sulfur plasma.